



**UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/226,216	01/07/99	OHTANI	H 0756-1921

MM92/0830  
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EXAMINER

SCHILLINGER, L

ART UNIT

PAPER NUMBER

2813

DATE MAILED:

08/30/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

Application No.  
09/226,216

Applicant(s)  
Ohtani et al

Examiner  
Laura Schillinger

Group Art Unit  
2813



- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

### Disposition of Claim

- ☒ Claim(s) 5-10 and 16-38 is/are pending in the application.
- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 5-10 and 16-38 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

### Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been
- ☒ received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

### Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 5-9 and 16-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Mitnaga et al ('997).

In reference to claim 5, Mitnaga teaches a method comprising:

forming a semiconductor film comprising amorphous Si (Abs., lines: 1-10);  
crystallizing the film by a heat treatment while a promoting material for facilitating crystallization is retained on or under the semiconductor film (Abs., lines:1-10);  
promoting crystallinity of the crystallized semiconductor film by irradiation of laser or intense light (Col.1, lines: 55-65);  
wherein the promoting material comprises one or more elements selected from the groups consisting of group 14 elements (Col.3, lines: 40-50).

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In reference to claim 6, Mitnaga teaches wherein the promoting material is Ge (Col.3, lines:45-47).

In reference to claim 7, Mitnaga teaches a method comprising:

applying a solution in which a simple substance of a catalytic element for facilitating crystallization of amorphous Si film or a compound containing the catalytic element is dissolved or dispersed, on a semiconductor film comprising amorphous Si (Col.3, lines: 40-50);

crystallizing the amorphous Si film by carrying out a heat treatment (Abs., lines: 1-10);  
and

promoting crystallinity by irradiation of laser light or intense light, wherein a plural kind of elements selected from elements in group 14 are used as the catalytic element (Col.14, lines: 30-35).

In reference to claim 8, Mitnaga teaches wherein Ge is used as the catalyst (Col.3, lines:40-50).

In reference to claim 9, Mitnaga teaches wherein the compound containing the catalytic element is at least one selected from the group consisting of GeBr (2), GeCl(2), GeI(2), GeO(2), GeS(2), germane, germane acetate, tris (2,4-pentanedionate) germanium perchlorate, tetramethylgermane, tetrethylgermane, tetraphenylgermane, and hexaethyl germanium (Col.3, lines: 40-50).

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In reference to claim 16, Mitnaga teaches a method comprising:

forming a semiconductor film comprising amorphous Si on an insulating surface (Abs., lines: 1-10);

forming a film comprising Ge in contact with the semiconductor film by VPD with a Ge gas (Col.4, lines: 25-30);

heating the film with the Ge to crystallize the film (Abs., lines: 1-10).

In reference to claim 17, Mitnaga teaches wherein the film comprising Ge is formed by LPCVD (Col.4, lines:25-30).

In reference to claim 18, Mitnaga teaches wherein the Ge containing gas is GeH(4) (Col.6, lines: 25-35).

In reference to claim 19, Mitnaga teaches further comprising removing the Ge containing film after crystallization (Col.17, lines: 45-60).

In reference to claim 20, Mitnaga teaches a method comprising:

forming a semiconductor film comprising amorphous Si on an insulating surface (Abs., lines: 1-10);

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forming a film comprising Ge in contact with the semiconductor film by VPD with a Ge compound gas (Col.4, lines: 25-30 and Col.6, lines: 25-35);

heating the semiconductor film with the film comprising Ge to crystallize the semiconductor film (Abs., lines: 1-10);

patterning the crystallized semiconductor film into at least one semiconductor island (Col.11, lines: 1-5);

forming a thin film transistor with the semiconductor island used as at least a channel forming region thereof (Col.11, lines: 1-10).

In reference to claim 21, Mitnaga teaches wherein the film comprising Ge is formed by LPCVD (Col.4, lines: 25-30).

In reference to claim 22, Mitnaga teaches wherein the Ge containing gas is GeH<sub>4</sub> (Col.6, lines:25-35).

In reference to claim 23, Mitnaga teaches further comprising removing the film comprising Ge after the crystallization of the semiconductor film (Col.17, lines:45-60).

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In reference to claim 24, Mitnaga teaches wherein the device is a video camera (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 25, Mitnaga teaches wherein the device is a mobile computer (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 26, Mitnaga teaches wherein the device is a portable telephone (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 27, Mitnaga teaches wherein the device is a head mount display (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 28, Mitnaga teaches wherein the device is a projector (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

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In reference to claim 29, Mitnaga teaches wherein the device is a video camera (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 30, Mitnaga teaches wherein the device is a mobile computer (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 31, Mitnaga teaches wherein the device is a portable telephone (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 32, Mitnaga teaches wherein the device is a head mount display (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 33, Mitnaga teaches wherein the device is a projector (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).



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In reference to claim 34, Mitnaga teaches wherein the device is a video camera (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 35, Mitnaga teaches wherein the device is a mobile computer (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 36, Mitnaga teaches wherein the device is a portable telephone (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 37, Mitnaga teaches wherein the device is a head mount display (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

In reference to claim 38, Mitnaga teaches wherein the device is a projector (See independent claim rejection above- this claim is a linking claim and is rejected as long as the independent method claim is also rejected).

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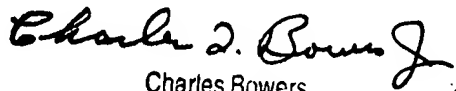
*Conclusion*

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Noguchi ('084) teaches a very similar method for a TFT.

Any inquiry concerning this communication from examiner should be directed to Laura Schillinger whose telephone number is (703) 308-6425. The examiner can normally be reached by telephone on Monday to Friday from 6:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers, can be reached on (703) 308-2417. The fax phone number for the group is (703) 308-7722.

LMS

  
Charles Bowers  
Supervisory Patent Examiner  
Technology Center 2800

August 25, 2000